

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A shower head structure for use in a device for processing a semiconductor while ~~a processing gas~~ one or more gases ~~is~~ being provided into a processing space accommodating a heated substrate to be processed, comprising:

a shower head including a plurality of gas injection holes for providing the ~~processing gas~~ one or more gases; and

at least one light introducing rod of a radiation thermometer inserted through at least one of the gas injection holes,

wherein at least one of the one or more gases is supplied to the processing space through said at least one of the gas injection holes through which said at least one light introducing rod is inserted.

Claim 2 (Previously Presented): The structure of claim 1, wherein the shower head includes a gas injection surface where the gas injection holes are provided and one of said at least one light introducing rod is inserted through a gas injection hole located at a substantially central part of the gas injection surface.

Claim 3 (Currently Amended): The structure of claim 1, wherein the shower head includes a gas injection surface where the gas injection holes are provided and ~~said at least one light introducing rod is~~ two or more light introducing rods are inserted through a number of gas injection holes, respectively, which are arranged along a radial direction of the gas injection surface and at least one of which is located at a substantially central part of the gas injection surface.

Claim 4 (Currently Amended): The structure of claim 1, wherein a gas is discharged from a lower end opening of said at least one of the gas injection holes to be diffused while the gas is falling toward outside of a susceptor in the processing space; and said at least one of the gas injection holes is spaced apart from a center of the shower head such that a position of a main gas stream of the gas discharged from said at least one of the gas injection holes falls outside an outer circumference of the substrate on the susceptor when the gas stream reaches an identical horizontal level to that of an upper surface of the susceptor.

Claim 5 (Previously Presented): The structure of claim 1, wherein an opening area of a gas injection hole through which each of said at least one light introducing rod is inserted is larger than an opening area of a gas injection hole through which no light introducing rod is inserted by a cross sectional area of said at least one light introducing rod, an identical gas being injected through the gas injection hole and said another gas injection hole.

Claim 6 (Original): The structure of claim 1, further comprising an elevator for moving the light introducing rod up and down, wherein the elevator selectively retreats the light introducing rod from said at least one of the gas injection holes through which the light introducing rod is inserted.

Claim 7 (Original): The structure of claim 6, further comprising a separation mechanism for selectively closing said at least one of the gas injection holes through which the light introducing rod is inserted.

Claim 8 (Currently Amended): The structure of claim 1, wherein, ~~in addition to the gas injection holes for providing an assist gas as the processing gas, the shower head further~~

~~includes plural gas injection holes for providing a source gas and~~ the gases include an assist gas and a source gas, and the gas injection holes include assist gas injection holes and source gas injection holes through which the assist and the source gas are respectively introduced to the processing space, the shower head ~~[[is]]~~ being configured such that the assist gas and the source gas are prevented from being mixed with each other therein.

Claim 9 (Previously Presented): The structure of claim 1, wherein an inert gas is introduced to said at least one of gas injection holes through which said at least one light introducing rod of the radiation thermometer is inserted.

Claim 10 (Currently Amended): A semiconductor processing device for processing a semiconductor while ~~a processing gas~~ one or more gases is being provided into a processing space accommodating a heated substrate to be processed, comprising:

- a processing chamber forming the processing space and capable of being pumped in vacuum;

- a susceptor for mounting the substrate in the processing chamber;

- a heater for heating the substrate on the susceptor;

- a shower head provided with a plurality of gas injection holes for supplying the ~~processing gas~~ one or more gases;

- at least one light introducing rod of a radiation thermometer inserted through at least one of the gas injection holes; and

- a temperature controller for controlling the heater based on a detected value of the radiation thermometer,

wherein at least one of the gases is supplied to the processing space through said at least one of the gas injection holes through which said at least one light introducing rod is inserted.

Claim 11 (Original): The device of claim 10, further comprising a support member having a ring shape, wherein the support member has a low thermal conductivity, blocks heat rays emitted from the heater and supports the susceptor by contacting a peripheral part thereof.

Claim 12 (Original): The device of claim 10, further comprising an isolation ring, installed on an upper side of a peripheral part of the susceptor for blocking heat rays.

Claim 13 (Currently Amended): The device of claim 10, wherein a gas is discharged from a lower end opening of said at least one of the gas injection holes to be diffused while the gas is falling toward an outside of the susceptor in the processing space; and said at least one of the gas injection holes is spaced apart from a center of the shower head such that a position of a main gas stream of the gas discharged from said at least one of the gas injection holes falls outside an outer circumference of the substrate on the susceptor when the gas stream reaches an identical horizontal level to that of an upper surface of the susceptor.

Claim 14 (Previously Presented): The device of claim 10, wherein an inert gas is introduced to said at least one of gas injection holes through which said at least one light introducing rod of the radiation thermometer is inserted.

Claim 15 (Previously Presented): The device of claim 10, further comprising a temperature measuring device installed at the susceptor to measure a temperature thereof; and a temperature compensator for correcting a setting temperature value of the susceptor based on a difference between a detection value of the radiation thermometer and a target temperature value of the substrate.

Claim 16 (Original): The device of claim 15, wherein the temperature measuring device is a thermocouple.

Claims 17-20 (Canceled).

Claim 21 (Currently Amended): A semiconductor processing device for processing a semiconductor while providing a processing gas into a processing space accommodating a heated substrate to be processed, comprising:

- a processing chamber forming the processing space and capable of being pumped in vacuum;

- a susceptor for mounting the substrate in the processing chamber;

- a heater for heating the substrate on the susceptor;

- a shower head ~~[[for]]~~ including a plurality of gas injection holes and a space formed therein, thereby providing the processing gas to the gas injection holes through ~~[[a]]~~ the space formed therein, the shower head being installed at a ceiling of the processing chamber;

- a heat ray introducing passage ~~vertically~~ formed through the shower head and separated from the space formed inside the shower head;

- a radiation thermometer facing through a measurement window at an upper opening part of the heat ray introducing passage; and

a gas introducing passage formed inside the shower head and connected to the heat ray introducing passage to introduce ~~[[a]]~~ an additional gas thereinto, ~~[[and]]~~ the gas introducing passage being separated from the space formed inside the shower head and the additional gas being introduced into the processing space through the heat ray introducing passage,

wherein the additional gas and the processing gas are different.

Claim 22 (Currently Amended): The device of claim 21, wherein the additional gas is discharged from a lower end opening of the heat ray introducing passage to be diffused while the additional gas is falling toward outside of the susceptor; and the heat ray introducing passage is spaced apart from a center of the shower head such that a position of a main gas stream of the additional gas discharged therefrom falls outside an outer circumference of the substrate on the susceptor when the gas stream reaches an identical horizontal level to that of an upper surface of the susceptor.

Claim 23 (Previously Presented): The device of claim 21, wherein a distance between a center of the shower head and a center of the upper opening part of the heat ray introducing passage is set to range from 70% to 100% of a radius of the substrate.

Claim 24 (Previously Presented): The device of claim 21, wherein a distance between a lower surface of the shower head and an upper surface of the susceptor is in a range from 20 mm to 30 mm, and a flow rate of the gas introduced through the heat ray introducing passage is in a range from 3 sccm to 100 sccm.

Claim 25 (Original): The device of claim 21, further comprising a support member having a ring shape, wherein the support member has a low thermal conductivity, blocks heat rays emitted from the heater and supports the susceptor by contacting a peripheral part thereof.

Claim 26 (Original): The device of claim 21, further comprising an isolation ring, installed on an upper side of a peripheral part of the susceptor, for blocking heat rays.

Claim 27 (Previously Presented): The device of claim 21, wherein the processing gas is introduced to the gas introducing passage.

Claim 28-35 (Canceled).

Claim 36 (New): The structure of claim 1, wherein the gases includes a first gas and a second gas different from the first gas, the gas injection holes include first gas injection holes and second gas injection holes through which the first and the second gas are respectively introduced into the processing space, and each of said at least one of the gas injection holes is included in the first gas injection holes.

Claim 37 (New): The structure of claim 36, wherein the shower head includes two divided head spaces into which the first gas and the second gas are introduced, respectively, the first gas introduced into one of head spaces is provided to the processing space through the first gas injection holes, and the second gas introduced into the other head space is provided to the processing space through the second gas injection holes.

Claim 38 (New): The structure of claim 36, wherein the first gas is an assist gas, and the second gas is a processing gas.

Claim 39 (New): The device of claim 10, wherein the gases include a first gas and a second gas different from the first gas, the gas injection holes include first gas injection holes and second gas injection holes through which the first and the second gas are respectively introduced into the processing space, and each of said at least one of the gas injection holes is included in the first gas injection holes.

Claim 40 (New): The device of claim 39, wherein the shower head includes two divided head spaces into which the first gas and the second gas are introduced respectively, the first gas introduced into one of head spaces is provided to the processing space through the first gas injection holes, and the second gas introduced into the other head space is provided to the processing space through the second gas injection holes.

Claim 41 (New): The device of claim 39, wherein the first gas is an assist gas, and the second gas is a processing gas.

Claim 42 (New): The device of claim 21, wherein the heat ray introducing passage is separated from the space formed inside the shower head such that the additional gas and the processing gas are supplied to the processing space from the shower head without being mixed.

Claim 43 (New): The device of claim 21, wherein the radiation thermometer is attached to the shower head.



Claim 44 (New): The device of claim 21, wherein a gas species constituting the additional gas is different from that of the processing gas.

Claim 45 (New): The device of claim 44, wherein the heat ray introducing passage is separated from the space formed inside the shower head such that the additional gas and the processing gas are supplied to the processing space from the shower head without being mixed.

Claim 46 (New): The structure of claim 1, wherein the at least one light introducing rod does not contact an inner peripheral wall of the at least one gas injection hole through which the at least one light introducing rod is inserted.